FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

27 April to 3 May, 2014 (Week 18)

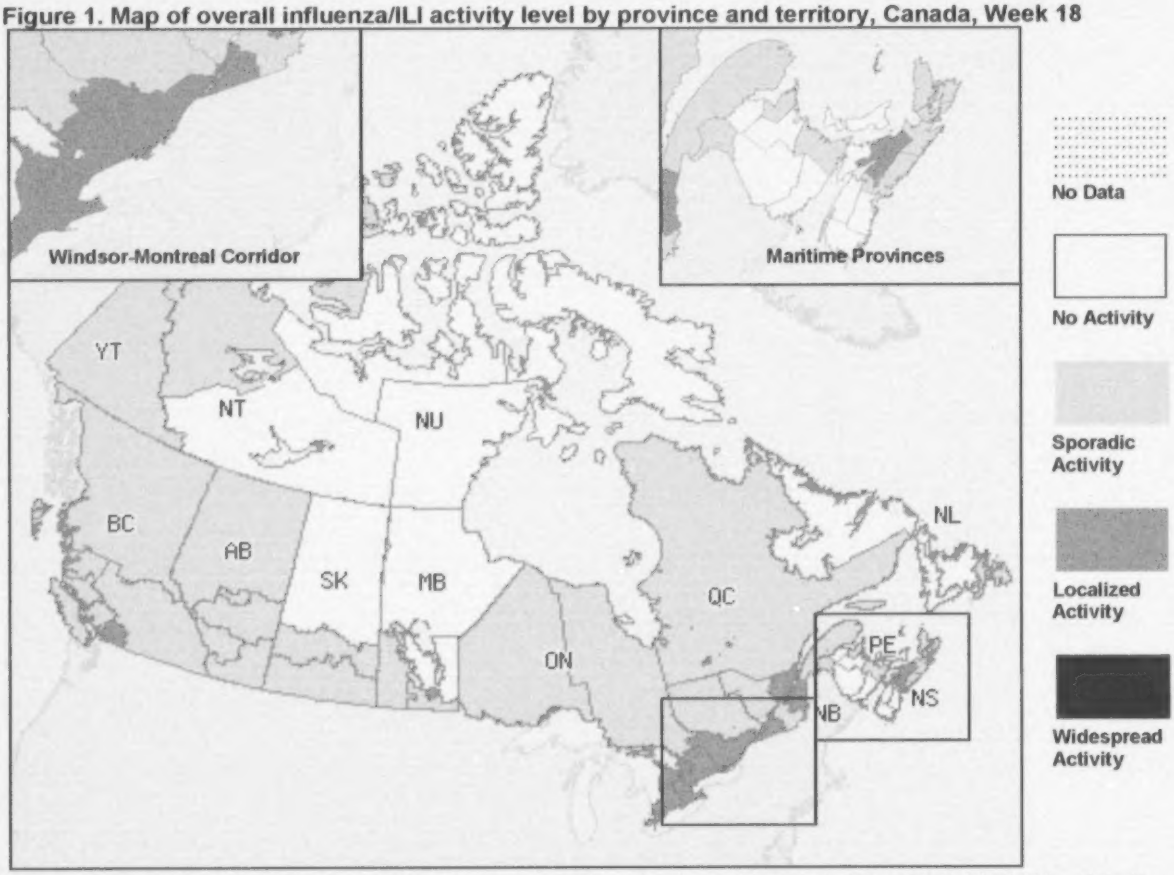
Overall Summary

- In week 18, influenza B continued to circulate in several regions across Canada. This sustained influenza activity remains within expected levels for this time of year, and is consistent with late-season circulation of influenza B.
- Influenza B is having a greater impact on adults 65 years of age and older and young persons 5 to 19 years of age, compared to influenza A(H1N1) which circulated earlier in the year.
- As of week 18, 4,623 hospitalizations and 258 deaths have been reported from participating regions, which is fewer than were reported last year.
- Globally, influenza activity in the northern hemisphere continues to decline, approaching inter-seasonal levels; influenza activity in the southern hemisphere remains low.

Influenza/ILI Activity (geographic spread)

After holding steady in March and April, the number of regions reporting localized or widespread influenza activity increased in week 18. In week 18, no region reported widespread activity and 12 regions (BC(1), MB(1), ON(5), QC(3) and NS(2)) reported localized activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 18

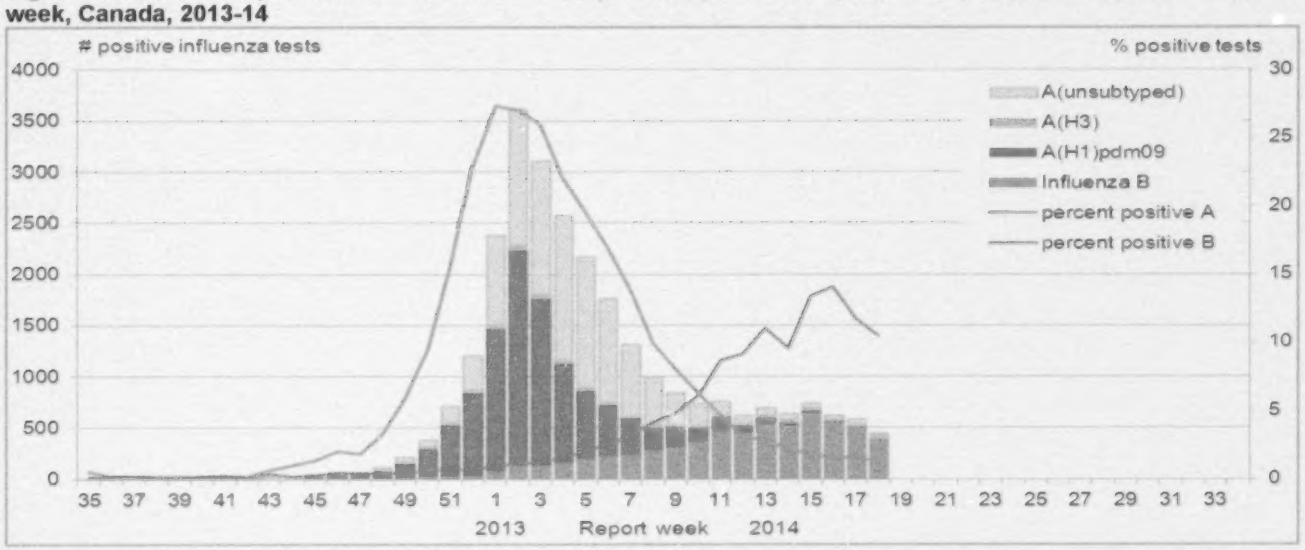


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests decreased from 580 in week 17 to 441 (11.7% of tests) in week 18 (Figure 2). Influenza B remained the predominant virus in week 18, representing 90% of influenza detections. Influenza B continues to circulate in many regions across Canada. Most jurisdictions report stable or declining levels of influenza detections over recent weeks. In week 18, Nova Scotia reported a sharp increase in influenza B detections which may have been due to testing related to outbreaks in long-term care facilities (Table 1). The pattern of influenza circulation during the 2012-13 and 2013-14 seasons has been similar, although this season the predominant circulating subtype of influenza A was A(H1N1)pdm09 and there has been more late-season circulation of influenza B. Significantly greater proportions of influenza B cases have been ≥65 years of age and 5-19 years of age compared to cases of A(H1N1)pdm09. Among cases for which information on age and type/subtype has been received, 51% of the cases in week 18 were ≥65 years of age compared to 20% of cases for the season to date (Table 2).

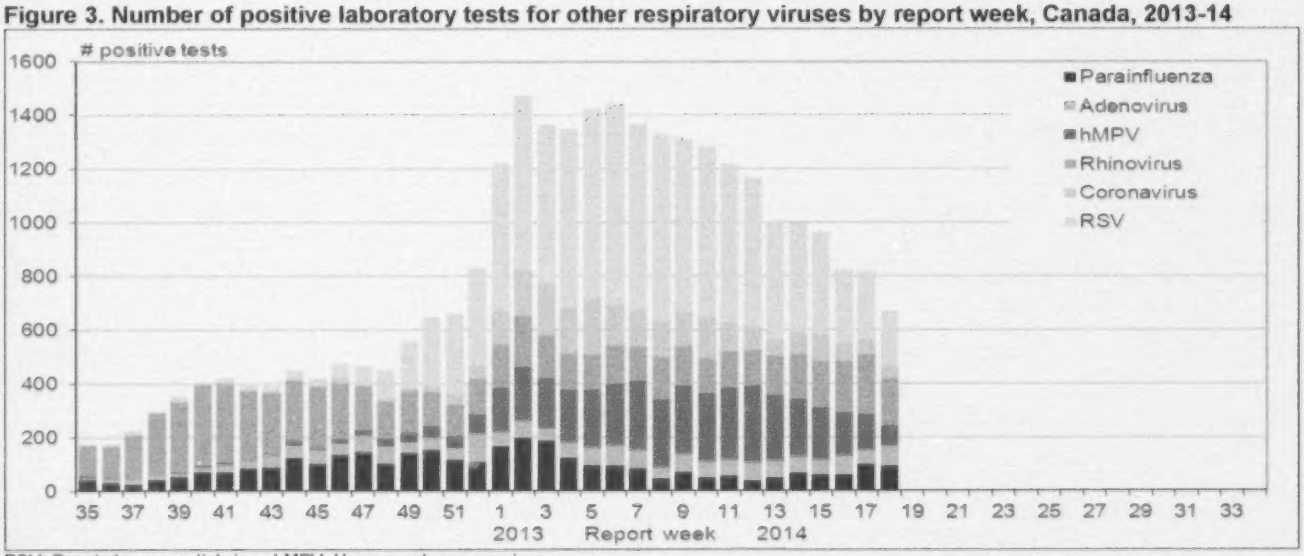
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV and coronavirus continued to decline, in keeping with their seasonal pattern of winter circulation. The number of positive tests for parainfluenza and adenovirus have been variable in recent weeks. More detections of human metapneumovirus have been reported compared to the previous three seasons, but have been declining since mid-March. Detections of rhinovirus have been relatively stable during the winter months, but have been increasing during late-March and April, in keeping with its seasonal distribution in recent years demonstrating a small peak of detections in the spring and a larger peak in the fall (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (April 27 to May 3, 2014)					Cumulative (August 25, 2013 to May 3, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	13	2	10	1	6	1813	1616	57	140	324
AB	0	0	0	0	32	3844	3454	76	314	381
SK	0	0	0	0	19	1383	988	8	387	134
MB	4	0	0	4	10	680	462	5	213	40
ON	18	3	10	5	209	5729	2489	364	2876	2670
QC	7	0	1	6	88	5353	677	5	4671	2601
NB	0	0	0	0	7	1488	370	1	1117	93
NS	0	0	0	0	18	174	134	4	36	33
PE	0	0	0	0	0	119	118	0	1	2
NL	2	0	0	2	8	371	104	0	267	226
Canada	**44**	**5**	**21**	**18**	**397**	**20954**	**10412**	**520**	**10022**	**6504**
Percentage[2]	10.0%	11.4%	47.7%	40.9%	90.0%	76.3%	49.7%	2.5%	47.8%	23.7%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

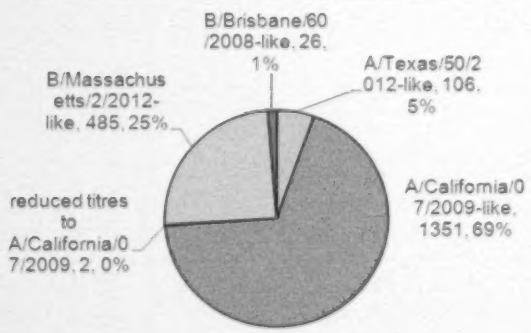
Age groups (years)	Weekly (April 27 to May 3, 2014)					Cumulative (August 25, 2013 to May 3, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	1	1	0	0	10	3257	1450	40	1767	501	3758	16.9%
5-19	1	0	0	1	15	1326	706	22	598	757	2083	9.3%
20-44	4	0	1	3	22	5077	2807	45	2225	907	5984	26.8%
45-64	0	0	0	0	38	4456	2387	60	2009	1331	5787	26.0%
65+	5	0	2	3	91	2567	1000	163	1404	1968	4535	20.3%
Unknown	0	0	0	0	0	136	102	21	13	7	143	0.6%
Total	11	1	3	7	176	16819	8452	351	8016	5471	22290	100.0%
Percentage[2]	5.9%	9.1%	27.3%	63.6%	94.1%	75.5%	50.3%	2.1%	47.7%	24.5%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 1,970 influenza viruses [106 A(H3N2), 1,353 A(H1N1)pdm09 and 511 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Twenty-six influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 1,970



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 1,714 influenza viruses for resistance to oseltamivir and all but three were sensitive. All 1,718 viruses tested for resistance to zanamivir were sensitive. All 1,511 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

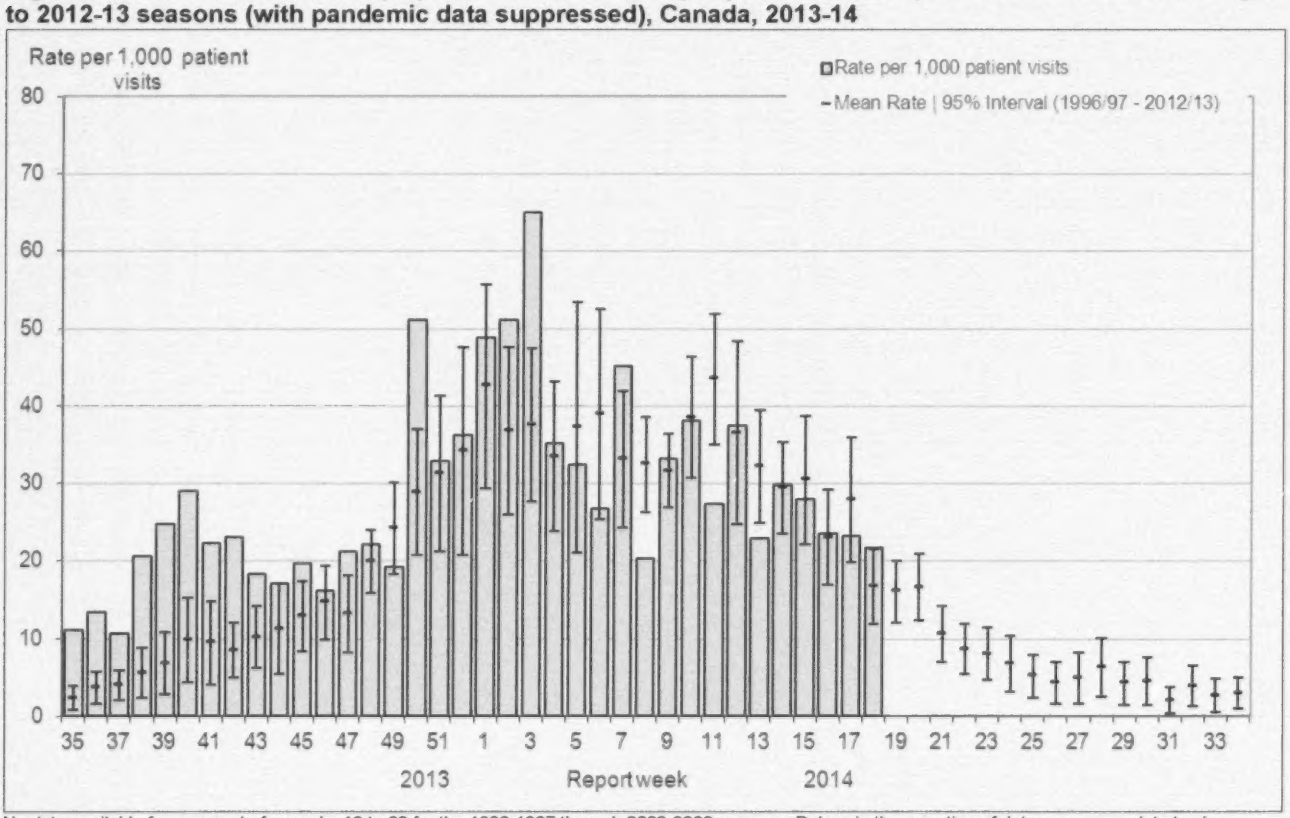
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	84	0	84	0	129	129 (100%)
A (H1N1)	1288	3 (0.2%)	1293	0	1382	1382 (100%)
B	342	0	341	0	NA[1]	NA[1]
TOTAL	1714	3 (0.2%)	1718	0	1511	1511 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate decreased from 23.3 consultations per 1,000 patient visits in week 17 to 21.7 / 1,000 in week 18; which was slightly above the expected range for week 18 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

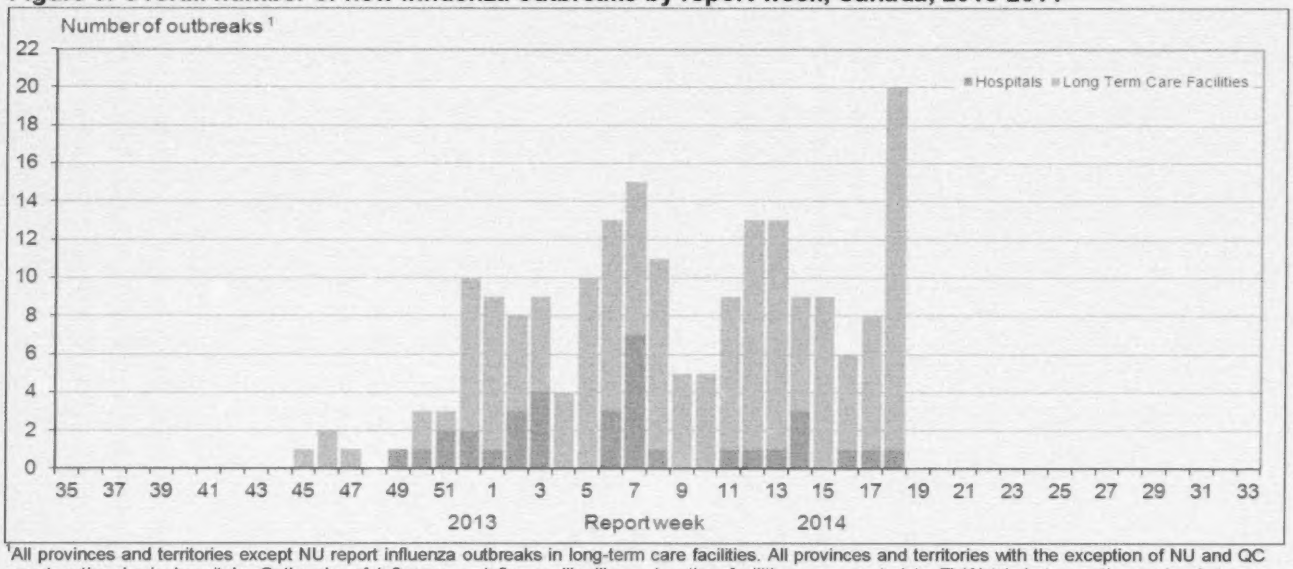


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

The number of new influenza outbreaks increased sharply from eight in week 17 to 21 in week 18: 19 in long-term care facilities, one in a hospital (Figure 6), and one in another setting or community. However, overall laboratory detections of influenza declined in 5 of the 6 regions reporting outbreaks. Among the 21 influenza outbreaks, 12 had data on the influenza type, of which 10 were influenza B.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

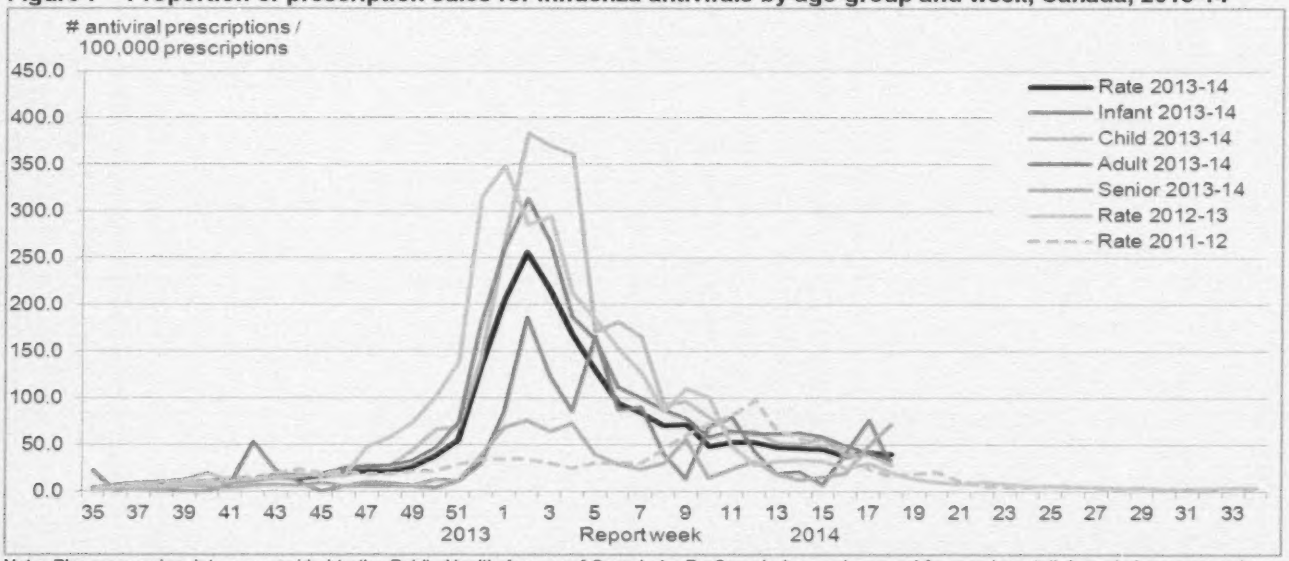


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 18, the proportion of prescriptions for antivirals was similar to the previous week, in keeping with laboratory detections of influenza. The proportion of prescriptions for antivirals decreased among infants <2 years of age and increased among adults ≥65 years of age, although these rates are more variable. Overall this season, the largest proportion of prescriptions for antivirals has been among children 2-18 years of age and adults 19-64 years of age (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 18, five new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to nine in week 17. Four cases reported in week 18 had influenza B (Figure 8a). A greater proportion of cases with influenza B this season have been children between 2 and 10 years of age compared to A(H1N1)pdm09. One ICU admission was reported in week 18 in a child 5-9 years of age with influenza A(unsubtyped), and no deaths were reported.

To date this season, a total of 684 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 81% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 73% of cases to date (Table 4). Ninety-eight ICU admissions have been reported, of which 66 (68%) were children <5 years of age (Figure 9a). All but six were cases with influenza A, and 97% of those subtyped were A(H1N1)pdm09. Among the 95 ICU cases with available data, 61 (64%) were reported to have underlying medical conditions. No deaths have been reported. A slightly smaller number of paediatric hospital admissions have been reported this year compared to the 2012-13 season.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 18, nine new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 31 in week 17 (Figure 8b). Since the beginning of March the majority of hospitalizations have been associated with influenza B. This season, a significantly greater proportion of cases of influenza B have been ≥65 years of age compared to cases of A(H1N1)pdm09. The proportion of cases among adults ≥65 years of age has followed the distribution of influenza B, and has declined in recent weeks. No ICU admissions or deaths were reported in week 18.

To date this season, 1,798 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 1,284 (71.4%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). Overall, slightly fewer cases have been reported this season compared to the 2012-13 season, however, nearly five times more cases of influenza B have been reported compared to last year. ICU admission was required for 291 hospitalizations, all but 43 of which were cases with influenza A (131 A(H1N1)pdm09, eight A(H3N2) and 109 A(unsubtyped)). A greater proportion of cases have been admitted to the ICU this season compared to last year, but the proportion of deaths has been similar. Of the 201 ICU admissions with available information, 172 (85.6%) were reported to have at least one comorbidity and of the 244 ICU admissions with available information 169 (69.3%) reported not having been vaccinated this season. Ninety-two deaths have been reported, all but 15 with influenza A (47 A(H1N1)pdm09, four A(H3N2) and 26 A(unsubtyped)); nine cases 20-44 years of age, 33 cases 45-64 years of age and 50 cases ≥65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

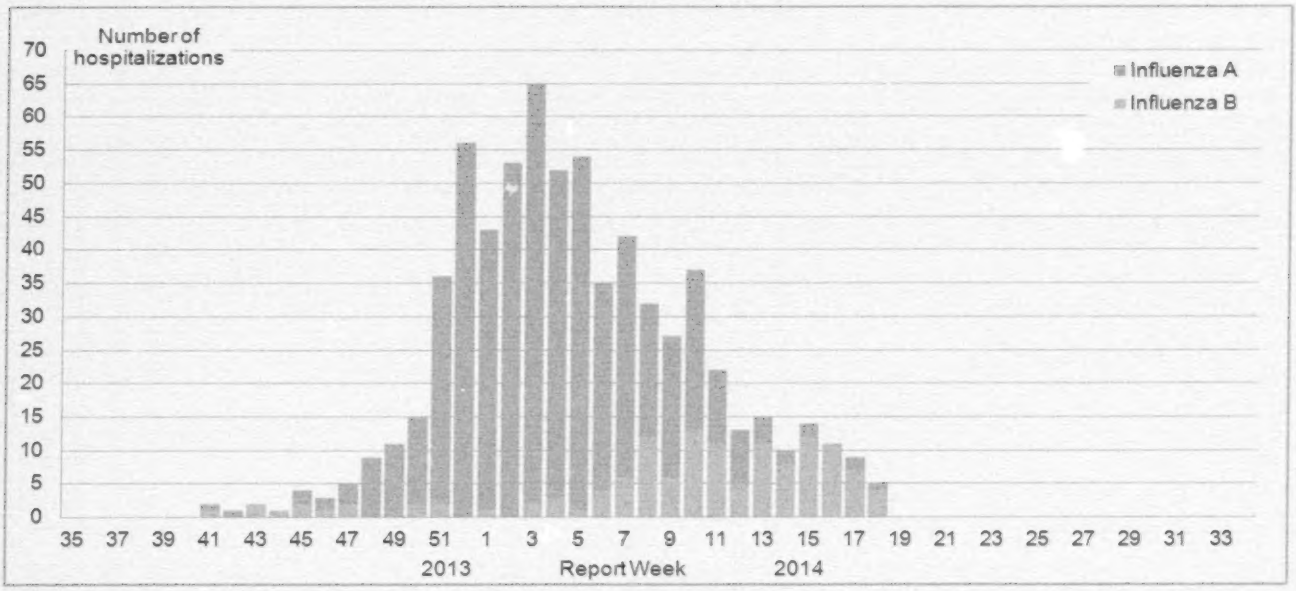
Age groups	Cumulative (25 Aug. 2013 to 3 May 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	104	34	0	70	8	112 (16%)
6-23m	163	51	1	111	21	184 (27%)
2-4y	166	55	3	108	39	205 (30%)
5-9y	82	27	1	54	50	132 (19%)
10-16y	39	14	1	24	12	51 (7%)
Total	554	181	6	367	130	684
%[1]	81.0%	32.7%	1.1%	66.2%	19.0%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

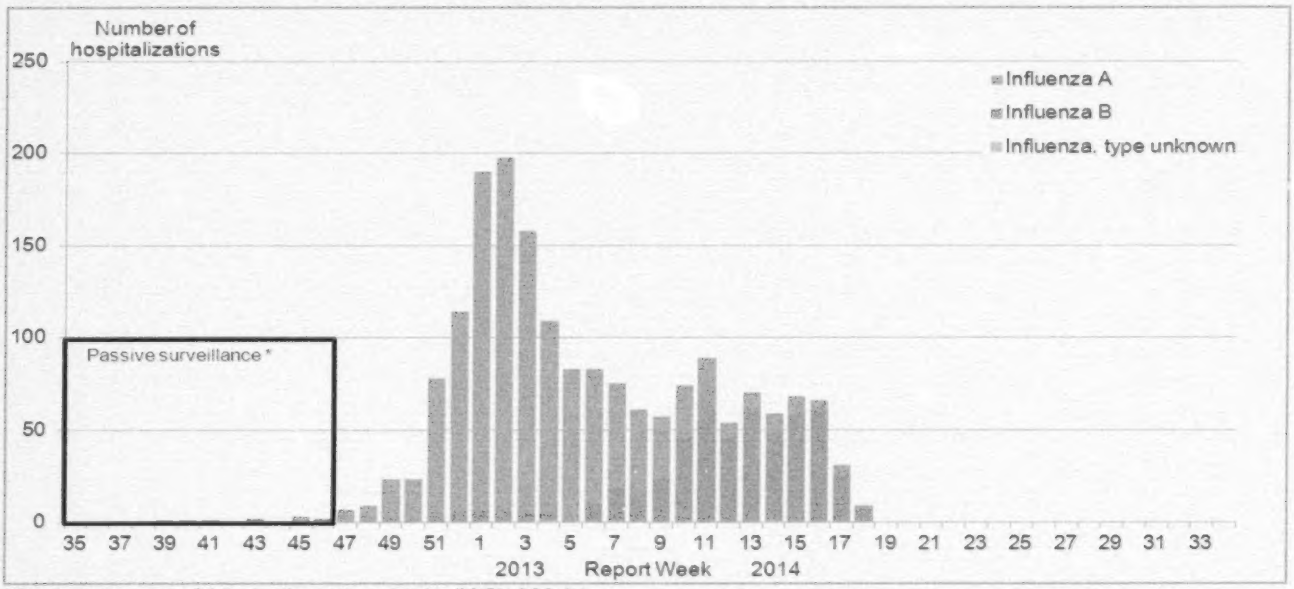
Age groups (years)	Cumulative (25 Aug. 2013 to 3 May 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	13	5	0	8	2	15 (1%)
20-44	269	143	6	120	37	306 (17%)
45-64	498	236	10	252	118	616 (34%)
65+	499	234	53	212	354	853 (48%)
Total	1279	618	69	592	511	1790
%[1]	71%	48%	5%	46%	29%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Two cases for which the influenza type has not yet been reported, and six cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



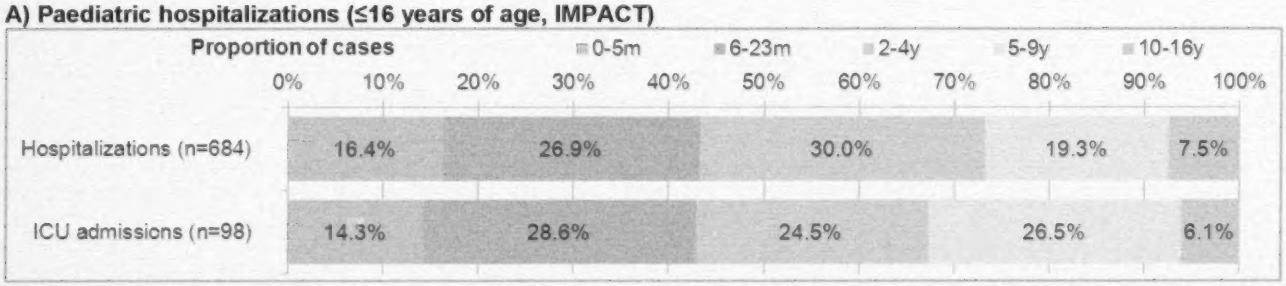
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



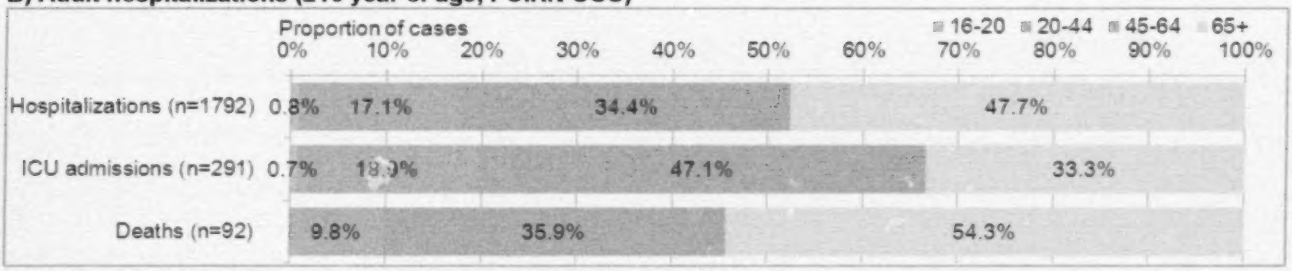
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 18, 206 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* As with other surveillance indicators in week 18, the majority were cases of influenza B (171, 83.0%). One ICU admission was reported in week 18, an adult 45-64 years of age with influenza A(H1N1)pdm09. Thirteen deaths were reported this week; two adults 45-64 years of age and 11 adults ≥65 years of age, 12 of the 13 with influenza B. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 4,623 influenza-associated hospitalizations have been reported, 77.6% with influenza A. The majority (60.8%) of hospitalizations have been cases 45 years of age of older. A significantly greater proportion of cases of influenza B have been ≥65 years of age, and 5-19 years of age, compared to cases of A(H1N1)pdm09 this season (Table 6). A total of 351 ICU admissions have been reported this season, of which 65.5% were adults 20-64 years of age. A total of 258 deaths have been reported. The highest proportion of deaths has been among adults ≥65 years of age (49.6%) followed by adults 20-64 years of age (41.9%). In keeping with the late-season circulation, influenza B has been increasingly reported among hospitalized cases of influenza. To date this season, influenza B has been reported in 22.4% of hospitalizations and 21.3% of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 3 May 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	614	287	12	315	105	719 (16%)
5-14	134	65	6	63	93	227 (5%)
15-19	36	21	3	12	5	41 (1%)
20-44	608	423	4	181	63	671 (15%)
45-64	1117	704	30	383	201	1318 (29%)
65+	942	465	98	379	553	1495 (32%)
Unknown	136	99	3	34	16	152 (3%)
Total	3587	2064	156	1367	1036	4623
Percentage[1]	77.6%	57.5%	4.3%	38.1%	22.4%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): No new cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report. Globally to May 8, 2014, the WHO has been informed of a total of 430 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 146 deaths. Cases have been reported in 12 provinces and 2 municipalities in China, and travel-related cases have been reported from Hong Kong, Taiwan, and Malaysia.

Documents related to the public health risk of influenza A(H7N9), as well as guidance for health professionals and advice for the public is updated regularly on the following websites:
PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Two hundred and thirty-four laboratory-confirmed cases of MERS-CoV have been reported by the World Health Organization since the last FluWatch report, including one case in Yemen with history of exposure to camels, and one case in the United States in a traveller from Saudi Arabia. Despite recent increases in the number of cases, the public health risk posed by MERS-CoV in Canada remains low (see the PHAC Assessment of Public Health Risk). Globally, from September 2012 to date, the WHO has been informed of a total of 496 laboratory-confirmed cases of infection with MERS-CoV, including 95 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East. Many of the recently reported cases have been secondary cases among close contacts or health care workers, however most secondary cases have resulted in mild illness. No sustained human-to-human transmission has been observed.

Documents related to the public health risk of MERS-CoV, as well as guidance for health professionals and advice for the public is updated regularly on the following websites:
PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.